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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/673,740	09/26/2003	Claus Muschallik	P2001,0226	1923

24131 7590 06/05/2006

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EXAMINER
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HAROON, ADEEL

ART UNIT	PAPER NUMBER
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2618

DATE MAILED: 06/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.



## **DETAILED ACTION**

### ***Response to Amendment***

1. This Office Action is in response to Amendment filed on date: 4/27/06.

Claims 1-8, 11-14, and 17 are still pending.

### ***Response to Arguments***

2. Applicant's arguments with respect to claims 1 and 17 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Auvray (U.S. 5,953,641) in view of Higuchi (U.S. 6,850,739).

With respect to claims 1 and 17, Auvray discloses a transmitting and receiving unit with a first, SYN, and second, SYN plus DIV, frequency generators (Column 4, lines 33-41). Auvray discloses a receiving branch with an in-phase and quadrature component having a first frequency converter, MRI and MRQ, coupled to the first frequency generator (Column 5, lines 12-16). Auvray also discloses a transmitting branch with an in-phase and quadrature component having a second frequency converter, MEI and MEQ, switchably coupled with CRI and CRQ to one of the first and second frequency generators (Column 2, lines 49-55). Auvray further discloses a programmable control device, CDE, coupled to the switch for selecting a transmitting mode of operation and receiving mode of operation (Column 4, line 66 – Column 5, line 11). Auvray further discloses the two frequency generators have a common reference frequency source, SYN (Column 4, lines 33-41). Auvray discloses the frequency generators with SYN, which is a frequency synthesizer thus containing a phase locked loop, thus each frequency generator having a phase-locked loop (Column 4, lines 33-41). Auvray further discloses using divider ratios, DIV, to generate local oscillator frequency (Column 4, lines 52-65). Auvray does not disclose that each frequency generator having a separate phase-locked loop. However, Higuchi discloses a transmitting and receiving unit with two frequency generators that operate in two bands thus making it analogous art since it is in the same field of endeavor. Higuchi teaches a first frequency generator having a PLL, 16, and a second frequency generator having a separate PLL, 36, while having a reference frequency source, 5, commonly connected to first and second frequency generators (Column 5, line 56 – Column 6, line 2).

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Higuchi further teaches the use of divider ratios, 20, to set local oscillator frequency (Column 6, lines 32-37). Therefore, it would be obvious to one of ordinary skill in the art at the time of the applicant's invention to include Higuchi's local oscillator structure into the unit of Auvray in order to provide two frequency generators that are separate yet have a common reference frequency source thus conserving parts while preserving independent control of parts.

5. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Auvray and Higuchi in view of Matero et al. (U.S. 5,768,691).

With respect to claim 2, the modified transmitting and receiving unit of Auvray and Higuchi is described above in the discussion of claim 1. Auvray further discloses the switch has switch positions (Column 4, line 66 – Column 5, line 11). Moreover, Auvray teaches that receiving branch has a radio frequency input and the transmitting branch provides a radio frequency signal (Column 2, lines 49-60). Auvray uses a duplexer, DUP, to separate the transmitting and receiving paths (Column 2, lines 56-60). Auvray does not disclose a second switch to separate the transmitting and receiving paths. However, Matero et al. discloses a transmitting and receiving unit that uses switch, element number 18, in figure 8 to replace a duplexer, element number 5, in figure 6 that separate the transmitting and receiving paths teaching that duplexers and SPDT are interchangeable (Column 4, lines 53-55). Therefore, it would be obvious to one of ordinary skill in the art at the time of the applicant's invention to use a switch not

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duplexers in Auvray's transmitting and receiving unit as taught by Matero et al. to separate the two paths.

With respect to claim 3, the modified transmitting and receiving unit of Auvray, Higuchi, and Matero et al. is described above in the discussion of claim 2. Matero et al. further teach band-pass filters, element numbers 20 and 22, coupled to the radio frequency end of the transmitting and receiving branches (Column 7, lines 38-41). Therefore, it would be obvious to one of ordinary skill in the art at the time of the applicant's invention to use bandpass filters as taught by Matero et al. in the modified unit of Auvray and Matero et al. in order to filter out noise.

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Auvray, Higuchi, and Matero et al. further in view of Weissman et al. (U.S. 6,795,690).

With respect to claim 4, the modified transmitting and receiving unit of Auvray, Higuchi, and Matero et al. is described above in the discussion of claim 3. Neither reference discloses surface acoustic wave filters. However, Weissman et al. teach using surface acoustic wave filters, element numbers 60 and 64, as band pass filters in the RF end of both transmitting and receiving branches (Column 4, lines 56-63). Therefore, it would be obvious to one of ordinary skill in the art at the time of the applicant's invention to use surface acoustic wave filters as taught by Weissman et al. in the modified unit of Auvray and Matero et al. in order to have better noise characteristics of the filters.

7. Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Auvray and Higuchi in view of Ohta et al. (U.S. 6,104,764).

With respect to claims 5 and 6, the modified transmitting and receiving unit of Auvray and Higuchi is described above in the discussion of claim 1. Auvray does not disclose digital signal processing device with a low-pass filter. However, Ohta et al. disclose a digital processing device with a low-pass filter, element number 12, with switchable filter coefficients, which are controllable (Column 13, lines 6-15). Therefore, it would be obvious to one of ordinary skill in the art at the time of the applicant's invention to apply Ohta et al.'s digital processing filtering technique in both the transmitting and receiving branches of Auvray's unit in order to provide better noise characteristics.

With respect to claims 7 and 8, Ohta et al. further disclose a phase error compensation network, element numbers 15 and 16, which with the low pass filter are controlled by the processor (Column 13, lines 6-15). Therefore, it would be obvious to one of ordinary skill in the art at the time of the applicant's invention to apply Ohta et al.'s phase error compensation technique in both the transmitting and receiving branches of Auvray's unit in order to provide better phase characteristics.

8. Claims 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Auvray, Higuchi, Matero et al., and Weissman et al. further in view of Ohta et al..

With respect to claims 11 and 12, the modified transmitting and receiving unit of Auvray, Higuchi, Matero et al., and Weissman et al. is described above in the discussion of claim 4. None of the references disclose digital signal processing device with a low-pass filter. However, Ohta et al. disclose a digital processing device with a low-pass filter, element number 12, with switchable filter coefficients, which are controllable (Column 13, lines 6-15). Therefore, it would be obvious to one of ordinary skill in the art at the time of the applicant's invention to apply Ohta et al.'s digital processing filtering technique in both the transmitting and receiving branches of the modified unit in order to provide better noise characteristics.

With respect to claims 13 and 14, Ohta et al. further disclose a phase error compensation network, element numbers 15 and 16, which with the low pass filter are controlled by the processor (Column 13, lines 6-15). Therefore, it would be obvious to one of ordinary skill in the art at the time of the applicant's invention to apply Ohta et al.'s phase error compensation technique in both the transmitting and receiving branches of the modified unit in order to provide better phase characteristics.

### ***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP



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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Adeel Haroon whose telephone number is (571) 272-7405. The examiner can normally be reached on Monday thru Friday, 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on (571) 272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AH  
5/23/06

*Nguyen Vo*  
5-26-2006

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PRIMARY EXAMINER**